WHAT IS CLAIMED IS:

1. A method of detecting a splicing defect in a dihydropyrimidine dehydrogenase gene, comprising determining whether a genomic DNA encoding the dihydropyrimidine dehydrogenase gene has a wild-type intron-exon boundary for an exon which encodes amino acids 581-635 of a corresponding wild-type dihydropyrimidine dehydrogenase protein.

2. The method of claim 1, wherein the method comprises the step of amplifying intronic genomic DNA encoding the dihydropyrimidine dehydrogenase in the region flanking the exon which encodes amino acids 581-635.

3. The method of claim 2, wherein the method comprises amplifying the genomic DNA with a primer which hybridizes to a dihydropyrimidine dehydrogenase intronic nucleic acid which hybridizes to a primer selected from the group of primers consisting of DELF1, and DELR1 under stringent conditions.

4. The method of claim 2, wherein DNA amplified with the primers is cleaved with a restriction endonuclease which recognizes a Mae II cleavage site.

5. The method of claim 1, wherein the sequence of the intron-exon boundary is determined using an oligonucleotide array.

6. A method of screening patients for sensitivity to 5-fluorouricil, comprising isolating a genomic DNA from the patient which encodes the dihydropyrimidine dehydrogenase gene and determining whether the gene has a wild-type intron-exon boundary for an exon which encodes amino acids 581-635 of a corresponding wild-type dihydropyrimidine dehydrogenase protein.

7. The method of claim 6, wherein the method comprises the step of amplifying intronic genomic DNA encoding the dihydropyrimidine dehydrogenase in the region flanking the exon which encodes amino acids 581-635.

8. The method of claim 7, wherein the method comprises amplifying the genomic DNA with a primer which hybridize to a dihydropyrimidine dehydrogenase intronic nucleic acid which hybridizes to a primer selected from the group of primers consisting of DELF1 or DELR1 under stringent conditions.

9. The method of claim 7, wherein DNA amplified with the primers is cleaved with a restriction endonuclease which recognizes a Mae II cleavage site.

10. A composition comprising a first PCR primer which binds to DNA 3' of a splice site in the genomic DNA for dihydropyrimidine dehydrogenase gene for an exon encoding amino acids 581-635, and a second PCR primer which binds to DNA 5' of a splice site in the genomic DNA for dihydropyrimidine dehydrogenase gene for an exon encoding amino acids 581-635.

11. The composition of claim 10, wherein the first PCR primer binds to intronic dihydropyrimidine dehydrogenase DNA.

12. The composition of claim 10, wherein the second PCR primer binds to intronic dihydropyrimidine dehydrogenase DNA.

13. The composition of claim 10, wherein the first PCR primer hybridizes under stringent conditions to a nucleic acid complementary to DELF1.

14. The composition of claim 10, wherein the second PCR primer hybridizes under stringent conditions to a nucleic acid complementary to DELR1.

15. A kit comprising a container, a first PCR primer which binds to DNA 3' of a splice site in the genomic DNA for dihydropyrimidine dehydrogenase gene for an exon encoding amino acids 581-635, and a second PCR primer which binds to DNA 5' of a splice site in the genomic DNA for dihydropyrimidine dehydrogenase gene for an exon encoding amino acids 581-635.

16. The kit of claim 15, wherein the kit further comprises instructions for the detection of splicing site defects in the dihydropyrimidine dehydrogenase gene.

17. The kit of claim 15, wherein the kit further comprises Mae II.

18. The composition of claim 15, wherein the first PCR primer hybridizes under stringent conditions to a nucleic acid complementary to DELF1.

19. The composition of claim 15, wherein the second PCR primer hybridizes under stringent conditions to a nucleic acid complementary to DELR1.

add a8

add a9